

MONA OFFSHORE WIND PROJECT

Environmental Statement

Volume 7, Annex 3.3: Great Crested Newt Survey Technical Report

Document Number: MOCNS-J3303-RPS-10097

Document Reference: F7.3.3

APFP Regulations: 5(2)(a)

February 2024

F01



Image of an offshore wind farm

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Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	Application	RPS	Mona Offshore Wind Ltd	Mona Offshore Wind Ltd	February 2024

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Prepared for:

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Glossary

Term	Meaning
Expert Working Group (EWG)	Expert working groups set up with relevant stakeholders as part of the Evidence Plan process.
Habitat Suitability Index (HIS)	Habitat Suitability Index is a methodology used to assess and evaluate the suitability of a pond or ponds for great crested newts
eDNA	Environmental Deoxyribonucleic Acid is DNA that collected from soil, water, or air rather than directly from an individual organism

Acronyms

Acronym	Description
ARG	Amphibian and Reptile Groups
Cofnod	North Wales Environmental Information Service
eDNA	Environmental Deoxyribonucleic Acid
EWG	Expert Working Group
GCN	Great crested newt
HSI	Habitat Suitability Index
MLWS	Mean Low Water Springs
NRW	Natural Resources Wales
SPI	Species of Principal Importance

Units

Unit	Description
%	Percentage
cm	Centimetres
km ²	Square kilometres
mm	Millimetres

1 Great crested newt survey technical report

1.1 Introduction

- 1.1.1.1 This document forms Volume 7, Annex 3.3: Great crested newt survey technical report of the Environmental Statement for the Mona Offshore Wind Project.
- 1.1.1.2 The purpose of this technical report is to present the results of the Great Crested Newt (GCN) *Triturus cristatus* desktop study and field surveys undertaken between April 2022 and June 2023 to inform Volume 3, Chapter 3: Onshore ecology of the Environmental Statement.
- 1.1.1.3 The desktop study and field surveys were designed to determine the presence or likely absence of GCN within and surrounding the Mona Onshore Development Area.
- 1.1.1.4 Two separate areas have been defined for the purposes of this technical report. These include the 'study area', which describes the geographical extent subject to desk based research and the 'survey area', which describes the area of land subject to site-specific surveys. The extent of the study area and the survey area were selected to ensure data was collected for the Mona Onshore Development Area and the surroundings that may support this species and may reasonably be affected by the Mona Offshore Wind Project. The extent of the study area and the survey area were discussed and agreed with the onshore ecology Expert Working Group (EWG).

1.2 Study area

- 1.2.1.1 The study area comprises the Mona Onshore Development Area, landward of Mean Low Water Springs (MLWS) and a 2 km buffer ('the GCN study area').
- 1.2.1.2 The location and geographical extent of the GCN study area is presented in Figure 1.1 of this technical report.

1.3 Survey area

- 1.3.1.1 Following the commencement of GCN surveys, the Mona Onshore Development Area has undergone multiple design iterations and now occupies a smaller geographical area. As such, the area of land subject to GCN surveys ('the GCN survey area') extends beyond the current iteration of the Mona Onshore Development Area. The results from surveys undertaken beyond the Mona Onshore Development Area (i.e. surveys undertaken based on an earlier design iterations) have been included in this technical report because they provide further context regarding the ecological sensitivity of the wider area and to inform Volume 3, Chapter 3: Onshore ecology of the Environmental Statement (where relevant). The GCN survey area comprises an earlier iteration of the Mona Onshore Development Area and an additional 250 m survey buffer. All the ecological data collected as part of the Environmental Statement for the Mona Offshore Wind Project has been made publicly available through the relevant data records centre.
- 1.3.1.2 Adopting a survey area that is greater in extent than the Mona Onshore Development Area is in accordance with the precautionary approach. It ensures that the Environmental Statement is accurately informed with data from within the Mona Onshore Development Area (i.e. that may be subject to direct impacts) and data from outside the Mona Onshore Development Area (i.e. that may be subject to indirect impacts).

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- 1.3.1.3 The location and geographic extent of the GCN survey area is presented in Figure 1.1 of this technical report.

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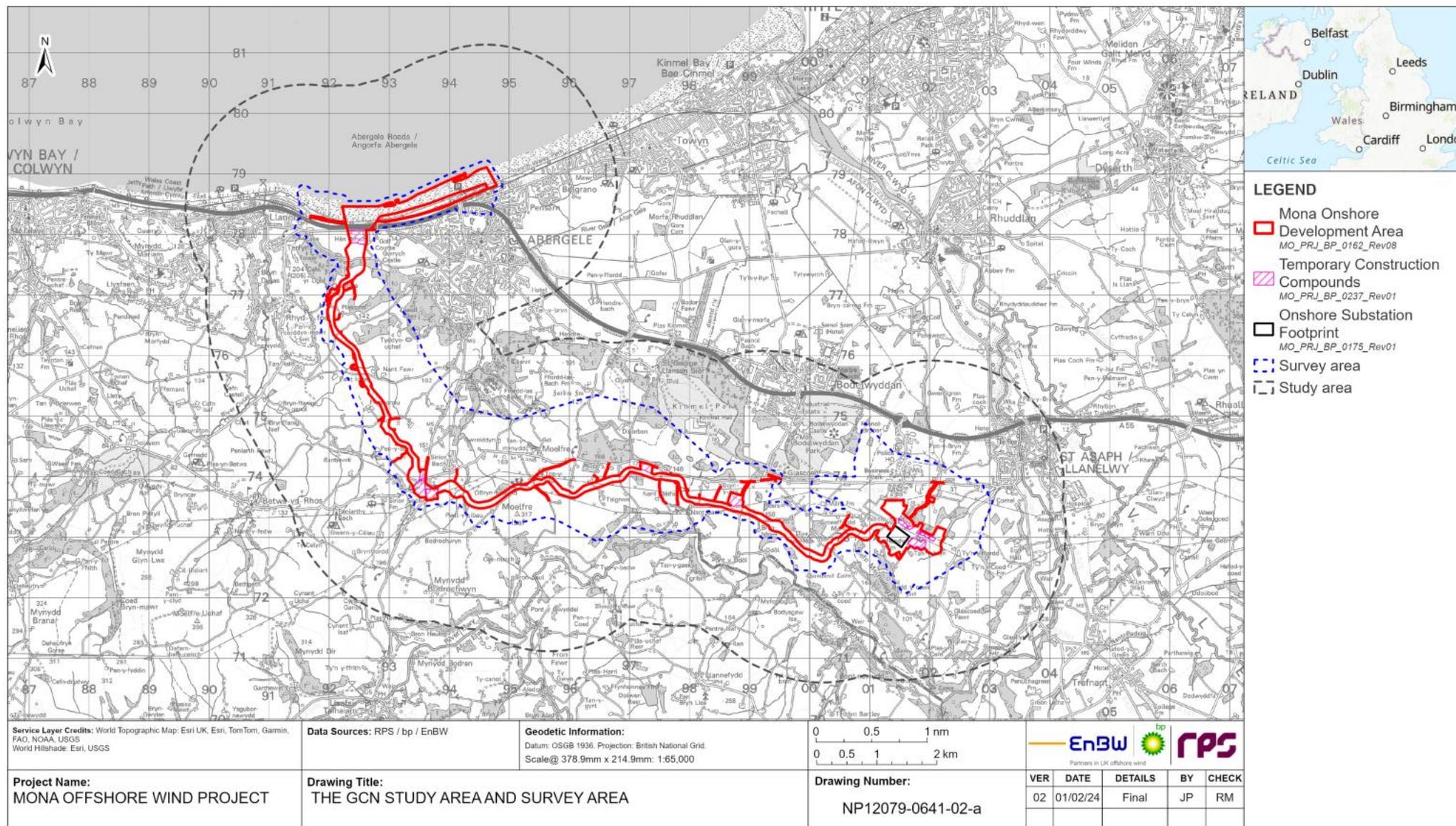


Figure 1.1: The GCN study area and survey area.

1.4 Relevant legislation

- 1.4.1.1 Three key pieces of legislation are relevant for GCN under Welsh and UK law: the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations), the Wildlife and Countryside Act 1981 (as amended) and the Environment (Wales) Act 2016.
- 1.4.1.2 GCN are listed under Schedule 2 of the Habitats Regulations making the species a European protected species. This makes it an offence to:
- Deliberately capture, injure or kill a GCN
 - Deliberately disturb a GCN
 - Damage or destroy a breeding site or resting place of a GCN.
- 1.4.1.3 GCN are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under Section 9 it is an offence to:
- Intentionally or recklessly disturb a GCN while it is occupying a structure or place, which it uses for that purpose
 - Obstruct access to a place of shelter or protection.
- 1.4.1.4 GCN are also afforded due regards in the planning system in Wales by the Environment (Wales) Act 2016, Section 7. GCN are listed as a Species of Principal Importance (SPI), giving public bodies and local planning authorities a legal duty to have regard for conserving SPI when exercising their duties.

1.5 Consultation

- 1.5.1.1 The scope, methodology and findings of the GCN surveys, including those undertaken beyond the current Mona Onshore Development Area, were discussed and agreed with stakeholders via regular onshore ecology EWG meetings. Further detail regarding consultation undertaken with respect to onshore ecology, including GCN surveys can be found in Volume 3, Chapter 3: Onshore ecology of the Environmental Statement and the Consultation Report (Document reference: E.3).

1.6 Methodology

1.6.1 Overview

- 1.6.1.1 A combination of desktop research and site-specific surveys were undertaken in 2022 and 2023 to establish the likely presence or absence of GCN within the study area. The desktop research included a review of GCN data collected as part of infrastructure projects in the area and GCN monitoring sites within the GCN study area. This review has been undertaken to supplement the existing ecological baseline particularly in areas where site-specific surveys to support the Mona Offshore Wind Project have not been undertaken. The results of this review are summarised in section 1.7 of this technical report.
- 1.6.1.2 Historical biological records of GCN were also obtained from North Wales Environmental Information Services (Cofnod). The historical biological records are listed in Volume 7, Annex 3.1: Onshore ecology desk study technical report of the Environmental Statement. The results of the site-specific surveys are detailed in section 1.7 of this technical report.

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1.6.2 Desktop study

1.6.2.1 Information on GCN in the GCN study area was collected from existing studies and datasets. These are summarised in Table 1.1 below.

Table 1.1: Summary of key desktop sources.

Title	Source	Year	Author
Historical biological records	North Wales Environmental Information Services (Cofnod)	2023	Cofnod
DataMapWales	Welsh Government	2023	Welsh Government
Multi-Agency Geographic Information for the Countryside (MAGIC)	Department For Environment, Food & Rural Affairs (Defra)	2023	Defra
Great Crested Newt Survey Report	Burbo Bank Extension Offshore Windfarm – Onshore Infrastructure	2022 - 2023	RPS
Great Crested Newt Survey Report	Awel Y Môr Offshore Wind Farm Environmental Statement Annexe	2022	RWE Renewables
St Asaph Business Park Monitoring GCN Report	St. Asaph Business Park Monitoring	2023	Biodiversity Advanced
St. Asaph Solar Farm Great Crested Newt Surveys	St. Asaph Solar Farm	2022	SLR

1.6.3 Site-specific surveys

1.6.3.1 Extended phase 1 habitat surveys undertaken between May 2022 and September 2023 confirmed the location of all waterbodies within the GCN study area. The data also informed which waterbodies within the GCN survey area were potentially suitable to support GCN, for example if the waterbodies contained water and aquatic vegetation. All waterbodies identified as being potentially suitable for GCN were subject to GCN surveys, which included:

- Habitat Suitability Index (HSI) Assessments
- Environmental DNA (eDNA) sampling
- Presence or likely absence surveys.

1.6.3.2 The HSI surveys assessed the suitability of each waterbody within the GCN survey area to support GCN. All waterbodies identified as being suitable to support GCN from HSI surveys were subject to subsequent eDNA surveys. The eDNA surveys confirmed the presence or likely absence of GCN. If access and seasonality permitted, waterbodies that returned positive GCN eDNA results were subject to further, more detailed presence or likely absence surveys to estimate the GCN population size in the waterbody. Each waterbody was given a unique waterbody identification number that consisted of the letter 'P' for pond followed by numbers (e.g. P148, P172 etc.).

1.6.3.3 Survey methodologies were informed by the Great Crested Newt Conservation Handbook, UK Amphibian and Reptile Group's (ARG) Advice Note 5 (ARG UK, 2010) and Biggs *et al.*, 2014. All field surveyors held Natural Resources Wales (NRW) GCN

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survey licences and were suitably experienced in undertaking the survey methodologies set out in this technical report.

1.6.4 Habitat Suitability Index Assessment

1.6.4.1 All accessible waterbodies within the GCN survey area were assessed for their suitability to support GCN using the HSI assessment methodology. The HSI methodology used followed the UK ARG's Advice Note 5 (ARGUK, 2010), which is an updated version of the original HSI methodology described in Oldham *et al.*, (2000).

1.6.4.2 The HSI methodology involved the assessment of ten key habitat indices, which are set out in Table 1.2 below and are typically associated with ponds used by GCN. For each waterbody subject to HSI assessment, a score between 0 and 1 is ascribed for each index. The scores are based on the descriptions and HSI scoring system detailed Advice Note 5 (ARGUK, 2010).

Table 1.2: Habitat Suitability Indices.

Suitability Index (SI)	Topic	Description
SI1	Location	Sites scored according to optimal geographic zones in the UK in which they occur. Zone A is optimal, Zone B is marginal and Zone C is unsuitable for GCN.
SI2	Pond area	Surface area of the pond when water is at its highest level (excluding flooding events); usually in the spring. For ponds smaller than 50 m ² a score of 0.05 is used. For ponds larger than 2000 m ² this factor is omitted. Index score is measured from a correlation graph.
SI3	Permanence	Local knowledge and personal judgement using the following four category scale: never dries, rarely dries, sometimes dries, dries annually.
SI4	Water quality	Based on invertebrate diversity, presence of submerged plants and knowledge of the water sources. Not to be confused with water clarity. Four point scale: good, moderate, poor, bad.
SI5	Shade	Estimate percentage (%) pond perimeter shaded, to at least 1 m from shore, excluding emergent vegetation. May – September inclusive. Score taken from correlation graph.
SI6	Waterfowl	Three point scale of impact: absent, minor, major.
SI7	Fish	Local knowledge and site observations. Four point scale: absent, possible, minor, major.
SI8	Pond count	Number of ponds located within 1 km. Score taken from a correlation graph.
SI9	Terrestrial habitat	Requires understanding of newt requirements. Habitat within 250 m of a pond, not separated by a significant barrier to newt movement. Four point scale: good, moderate, poor, none.
SI10	Macrophytes	Estimate of % pond surface area covered by macrophytes (including emergent, floating (not duckweed) and submerged plants reaching the surface). May – September inclusive. Score taken from correlation graph.

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1.6.4.3 An overall HSI score was subsequently calculated for each waterbody using the individual index scores, as listed in Table 1.2 above. The following equation was used to calculate the overall HSI Score = $(SI1 \times SI2 \times SI3 \times SI4 \times SI5 \times SI6 \times SI7 \times SI8 \times SI9 \times SI10)^{1/10}$. The overall HSI score was then translated into a classification of habitat suitability, as listed in Table 1.3 below.

Table 1.3: Habitat suitability classification.

Overall HSI Score	Suitability for GCN
>0.8	Excellent
0.7 – 0.79	Good
0.6 – 0.69	Average
0.5 – 0.59	Below average
<0.5	Poor

1.6.5 eDNA sampling

- 1.6.5.1 Waterbodies identified as having an overall HSI score of 0.5 and above (i.e. classified as ‘below average’ suitability for GCN or better) were subject to eDNA sampling. Some waterbodies in 2023 were subject to HSI and eDNA surveys at the same time to prevent unnecessary repeat visits. This approach resulted in a small number of waterbodies that were of poor suitability for GCN being subject to eDNA sampling.
- 1.6.5.2 The eDNA sampling technique is set out in the Analytical and Methodological Development for Improved Surveillance of the GCN (Biggs *et al.*, 2014). The method has been developed for standing waterbodies such as ponds and ditches. The use of eDNA has been accepted as a means of confirming the presence or likely absence of GCN by NRW (NRW, 2022).
- 1.6.5.3 The optimal GCN eDNA sampling season is between mid-April and the end of June, as per Natural England standing advice (Rees *et al.*, 2023). Water samples were collected from all accessible waterbodies within the GCN survey area that held water between May and June 2022.
- 1.6.5.4 The eDNA samples were collected by surveyors who had been trained in the Biggs *et al.*, (2014) methodology and were suitably competent.
- 1.6.5.5 The eDNA water samples were collected using specific GCN eDNA sampling kits supplied by ADAS Ltd. Surveyors collected 30 ml of water samples from 20 locations along the margins of each waterbody surveyed, using a sterile ladle. The samples were collected from the bank edge without entering or disturbing the water to prevent contamination of samples. Where access allowed, water samples were collected from points evenly spaced along the banks. When collecting the water samples, the surveyors used a ladle to gently agitate the water and mix the water column, whilst taking care not to disturb any sediment, before collecting each sample.
- 1.6.5.6 The 20 samples collected from each waterbody were emptied into a sterile plastic bag and homogenised by gently shaking the bag to ensure eDNA was evenly mixed through the sample. A pipette was then used to transfer six 15 ml sub-samples of the water from the bag into sterile tubes containing 35 ml of ethanol to preserve the eDNA samples.

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- 1.6.5.7 The samples were then stored in a refrigerator before being couriered to ADAS Ltd. for laboratory analysis to confirm the presence or absence of GCN eDNA.
- 1.6.5.8 eDNA analysis was undertaken following the protocols for quantitative Polymerase Chain Reaction eDNA testing described in Biggs *et al.* (2014).

1.6.6 Presence or likely absence surveys

- 1.6.6.1 All waterbodies with confirmed GCN eDNA presence were subsequently subject to detailed presence or likely absence surveys using traditional survey methods, including bottle trapping, torchlight survey, egg search and net survey. Waterbodies with confirmed GCN eDNA presence required at least four presence or likely absence survey visits to reaffirm GCN presence. Each survey comprised three different traditional survey methodologies, as per the GCN Mitigation Guidelines (English Nature, 2001). An additional two presence or likely absence survey visits were required if GCN were confirmed to be present. These fifth and sixth surveys, which used the same three traditional survey methodologies, enabled the GCN population size class to be estimated. Waterbodies were only surveyed where access was permitted and safe.

Bottle Trapping

- 1.6.6.2 The bottle traps comprised a 2 litre plastic bottles. The top 10-15 cm had been cut off and inverted inside the bottle. Air holes were also made in the bottom of the bottle. The traps were partially submerged upside down in the water, leaving the base of the bottle above the water-level with a pocket of air at the exposed end, which prevented any trapped animals drowning. The traps were held in the water with bamboo canes that were pushed into the substrate of the waterbody, or by floating polystyrene rafts that were attached to the banks by a secure cord.
- 1.6.6.3 Traps were set around the margins of the water body and where access safely allowed, at a density of approximately one trap every two metres.
- 1.6.6.4 The traps were set around 1-2 hours before sunset and left overnight. Surveyors emptied the traps the following morning and the number, sex, age and life stage of any captured GCN was recorded. Incidental records were also made of other amphibians recorded during site-specific surveys where present.

Torchlight survey

- 1.6.6.5 All accessible parts of a waterbody were systematically surveyed for GCN at night by shining a 1,000,000 candle power torch across the surface of the water. Torchlight surveys commenced 30 minutes after sunset and continued until the water body was sufficiently surveyed. Surveyors walked slowly around the edge of the waterbody recording the number and, where possible, the sex, of any GCN or other amphibians observed.
- 1.6.6.6 Factors that could impact the effectiveness of the survey were recorded, such as water clarity, accessibility, and dense vegetation. Periods of moderate to heavy rain or wind that could disturb the surface of the water were avoided, thus ensuring all movement below the surface of the water was visible.

Egg search

- 1.6.6.7 The eggs of GCN are a distinctive white or very light yellow and approximately 5 mm in diameter. Other UK newt species eggs are smaller and are darker in colour. All suitable submerged aquatic plants with leaves large enough for egg laying were inspected for GCN eggs, where access and safety permitted. Any folded leaves that could hide GCN eggs were carefully opened to determine presence or likely absence. As soon as GCN presence was confirmed in a waterbody, the egg search survey was stopped to avoid any unnecessary disturbance to the eggs.

Net survey

- 1.6.6.8 All accessible parts of a waterbody were systematically surveyed for GCN using a long-handled net with a fine mesh small enough to catch adult newts and larvae with minimal risk of injury. After each sweep of the net, the contents were carefully inspected to record the presence or likely absence of GCN. Net surveys have the potential to harm newts and other wildlife and were used only where bottle traps, torchlight surveys and egg surveys were not possible.

1.6.7 Limitations

- 1.6.7.1 A total of 127 waterbodies were identified within the GCN survey area. Of the 127 waterbodies, 58 waterbodies were surveyed, and 69 waterbodies were not. The 69 waterbodies were not surveyed because of access restrictions and safety concerns (e.g. livestock). The precautionary approach was subsequently adopted and GCN presence was assumed in all waterbodies that were not surveyed. This approach ensured that the Volume 3, Chapter 3: Onshore ecology of the Environmental Statement was robust and not based on insufficient or partial data.
- 1.6.7.2 Of the 58 waterbodies surveyed in the GCN survey area, only 3 waterbodies were subject to presence or likely absence surveys using traditional survey methods. These were ponds P76, P111 and P121. This was due to a combination of sub-optimal weather conditions and land access restrictions. Additionally, only a single visit to each of the three waterbodies was undertaken. This was due to time constraints, poor weather conditions and land access restrictions. Surveys at P076 and P111 were commenced towards the end of the acceptable GCN survey period in June 2023. As such, full presence or likely absence surveys using traditional survey methods will be undertaken (where required) prior to the commencement of construction. Requirements for pre-commencement surveys are set out in the Outline Code of Construction Practice (CoCP) (document reference: J26).
- 1.6.7.3 A precautionary approach has been applied to the size of the GCN metapopulation within the Mona Onshore Development Area. A 'large' metapopulation has been assumed. Large populations are considered to hold 100 or more GCN (English Nature, 2001). This assumption is based on the well-studied status of GCN from previous surveys and monitoring undertaken in the region. This approach has been discussed and agreed with the EWG. The population size estimate will be revised using data that will be collected during 2024, prior to construction commencing. The pre-commencement survey data will also be used to inform and update the required scheme of mitigation for GCN. Pre-commencement GCN field-surveys are a requirement of the Development Consent Order (European protected species onshore).

1.7 Results

Desktop Study

- 1.7.1.1 GCN have been recorded throughout east Wales but very infrequently in central or west Wales (DataMapWales, 2023). Northeast Wales is recognised as being particularly rich in the species (Cofnod, 2023). Previous studies of GCN have assessed the metapopulation within the St. Asaph area as being of national importance (Haysom *et al.* 2018).
- 1.7.1.2 There were 31 historical records of GCN within the GCN study area from the last 10 years (Cofnod, 2023). The most recent record was identified in 2023 in a pond at the St. Asaph Business Park, less than 500 m to the north of the Mona Onshore Development Area. Two of the records were within the Mona Onshore Development Area, north of the Onshore Substation. Multiple records were also identified just outside of the Permanent Access Route, to the east of the Mona Onshore Development Area.
- 1.7.1.3 The historical biological records of GCN reported by Cofnod are provided in Volume 7, Annex 3.1: Onshore ecology desk study technical report of the Environmental Statement. These records are shown on Figure 1.2 which comprises data accurate to a six-figure grid reference or higher. Data with lower resolutions do not allow for an accurate calculation of distance from the Mona Onshore Development Area.

GCN survey data from other sources

- 1.7.1.4 Additional GCN data was obtained from existing or proposed infrastructure projects and monitoring schemes that overlapped with or were in proximity to the Mona Onshore Development Area. The projects that provided additional data were all located towards the east end of the Mona Onshore Development Area and are summarised in the following sections below.
- 1.7.1.5 This data was reviewed and where relevant used to supplement the ecological baseline pertaining to GCN, to enable a robust assessment within Volume 3, Chapter 3: Onshore ecology of the Environmental Statement. This data has also informed relevant mitigation requirements set out in the Outline Great Crested Newt Management Strategy, which forms part of the wider Outline Landscape and Ecology Management Plan for the Mona Offshore Wind Project (document reference: J22).

Burbo Bank Extension Offshore Wind Farm – Monitoring

- 1.7.1.6 Monitoring surveys under a European Protected Species (EPS) development licence have been undertaken to support the consented Burbo Bank Extension Offshore Wind Farm project, within the Burbo Bank onshore substation (Keystone Environmental, 2023). The Burbo Bank onshore substation is located to the south east of the St. Asaph Business Park. The surveys included five waterbodies within the Burbo Bank onshore substation area, which are outside of the Mona Onshore Development Area but within the GCN survey area, east of the Permanent Access Route. The five waterbodies are P144, P145, P151 and P152, P155, and are referred to as the 'Bodelwyddan Pond Group'. Each of the five waterbodies were assessed as having an average, good or excellent suitability for GCN. A minimum of 10 GCN were recorded at four of the five waterbodies during two different 2022 surveys and GCN were recorded in three of the five ponds during 2023 surveys, with a peak count of four GCN in three ponds.

Awel y Môr Offshore Wind Farm

- 1.7.1.7 GCN surveys were undertaken to support the application for a Development Consent Order for the Awel y Môr Offshore Wind Farm project. The Awel y Môr Offshore Wind Farm project's onshore footprint extended from just south of St. Asaph to the North Wales coast, overlapping with the current Mona Onshore Development Area. A total of 54 waterbodies were surveyed using eDNA sampling and presence or likely absence surveys. Of the 54 waterbodies, 20 supported GCN. Of the 20 waterbodies with confirmed GCN presence, five are within the GCN survey area, none are within the Mona Onshore Development Area. The Awel y Môr Offshore Wind Farm Great Crested Newt survey report (SLR, 2021) included historic GCN presence data of the 10 waterbodies within the Bodelwyddan Pond Group. The Bodelwyddan Pond Group is located to the southeast and northwest of the Permanent Access Route.

St. Asaph Business Park Great Crested Newt Monitoring Surveys

- 1.7.1.8 GCN monitoring surveys were undertaken in 2021, 2022 and 2023 to support works at St. Asaph Business Park (Biodiversity Advanced, 2023). Monitoring surveys in 2021 and 2022 recorded maximum counts of 10 and 11 GCN (respectively) in a single pond. The following ponds were surveyed in 2023: P98, P100, P102, P103, P118, P132, and P137. The peak count in a single survey visit across all waterbodies was 11 GCN.
- 1.7.1.9 Survey data from monitoring visits undertaken at St. Asaph Business Park date back as far as 2002. The largest number of GCN recorded during monitoring visits was 206 in a single pond, in 2009.
- 1.7.1.10 The nine waterbodies surveyed as part of the St. Asaph Business Park monitoring are within the GCN survey area but outside of the Mona Onshore Development Area.

St. Asaph Solar Farm Great Crested Newt Surveys

- 1.7.1.11 GCN surveys were undertaken to inform the ecological baseline for the St. Asaph Solar Farm development in 2022 (SLR, 2022). The development overlaps with the Mona Onshore Development Area, to the north and east of the Temporary Construction Compounds associated with the Onshore Substation.
- 1.7.1.12 A total of 62 waterbodies were identified as part of the development's desktop research. Of the 60 waterbodies, 14 were identified as supporting GCN through a combination of eDNA surveys and presence or likely absence surveys. Of the 14 waterbodies with confirmed presence, four were within the Mona Onshore Development Area. These are ponds P176, P180, P186, P187, which were not surveyed as part of the Mona Offshore Wind Project due to land access restrictions. Of the four ponds within the Mona Onshore Development Area, a single GCN was recorded at P176 only.

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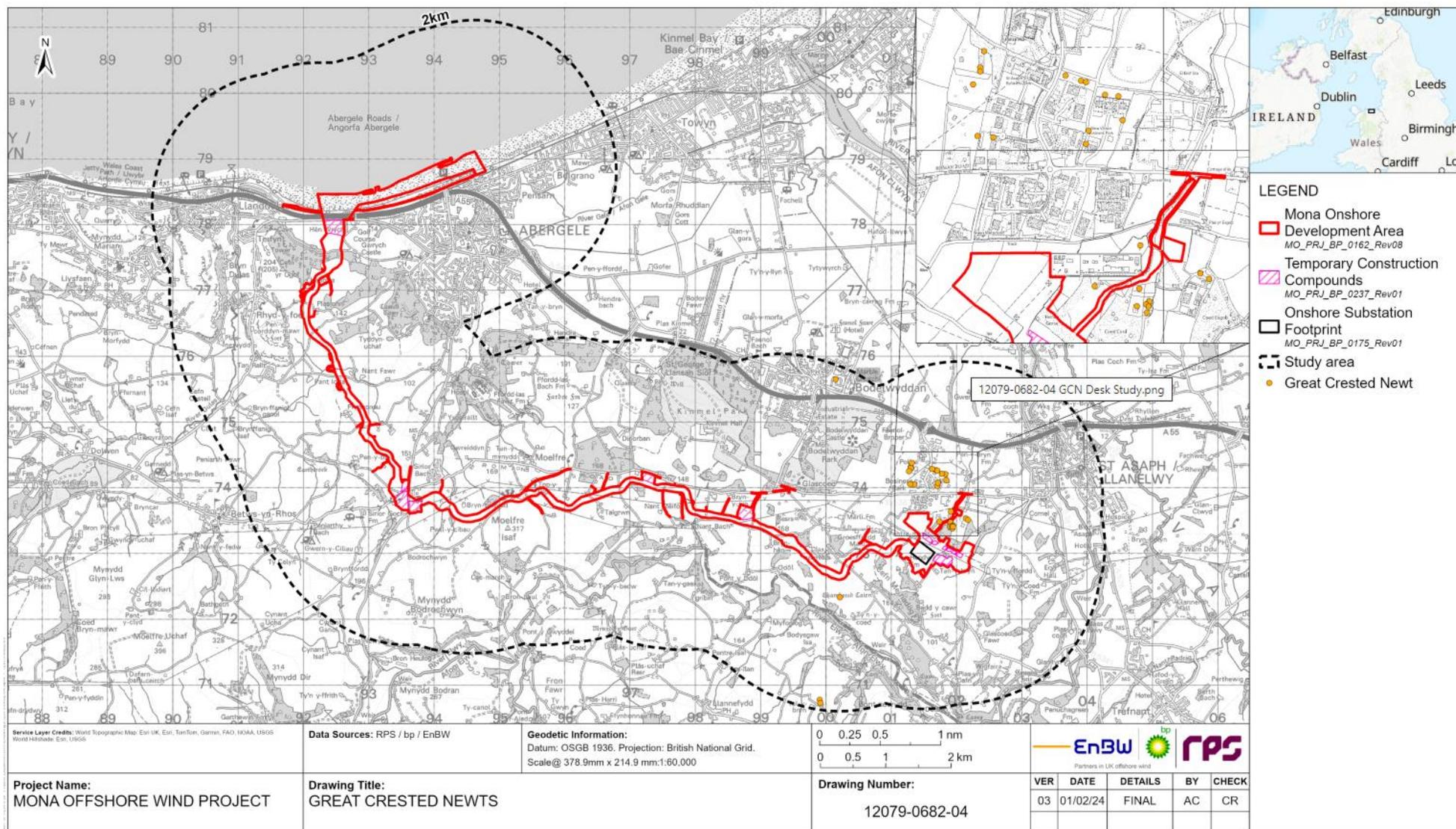


Figure 1.2: Great crested newt desk survey results.

1.8 Site-specific surveys

1.8.1 Overview

1.8.1.1 A total of 127 waterbodies were identified within the GCN survey area. Of the 127 waterbodies, 58 were surveyed. The surveys comprised 35 waterbodies that were subject to HSI assessment and 39 waterbodies that were subject to eDNA surveys. Some of the 58 waterbodies were subject to both HSI and eDNA surveys. Three waterbodies were subsequently subject to presence or likely absence surveys using traditional methods. Seven waterbodies were dry, P009, P045, P097, P116, P125, P131 and P177 and were scoped out.

1.8.1.2 The eDNA surveys confirmed GCN presence in 10 waterbodies. Of the 10 waterbodies one, P147, was located within the Mona Onshore Development Area. All the other waterbodies with confirmed GCN presence were outside of the Mona Onshore Development Area. All waterbodies surveyed are summarised in Appendix A.

1.8.2 Habitat Suitability Index Assessment

1.8.2.1 A total of 35 waterbodies within the GCN Survey Area were subject to HSI assessments during 2022 and 2023. Of the waterbodies surveyed, one was located within the Mona Onshore Development Area, P229, which was within the footprint of the Onshore Substation. Table 1.4 below lists the five HSI categories and the number of waterbodies within each category. One waterbody, P058, was assessed as having excellent suitability for GCN. P058 was located outside the Mona Onshore Development Area.

The full results of each waterbody are provided in Appendix A of this technical report. Waterbodies subject to HSI assessments are presented in Figure 1.3 to Figure 1.9 of this technical report.

Table 1.4: Habitat Suitability Index assessment results from 2022 and 2023.

HSI Category	Number of waterbodies within GCN survey area	Number of waterbodies within Mona Onshore Development Area
Excellent	2	0
Good	5	0
Average	6	0
Below average	4	1
Poor	18	0
Total Waterbodies	35	1

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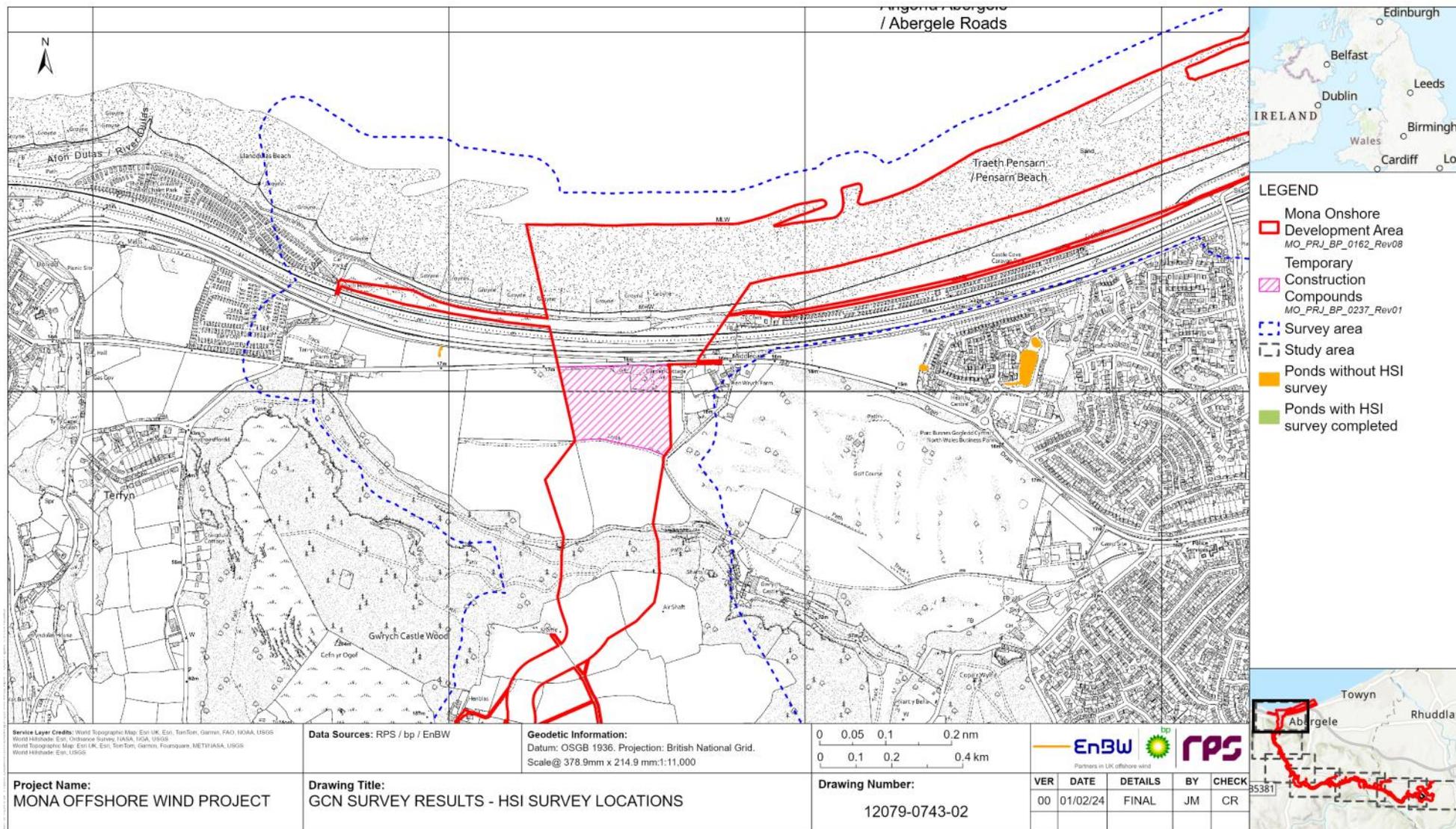


Figure 1.3: GCN survey results - HSI survey locations.

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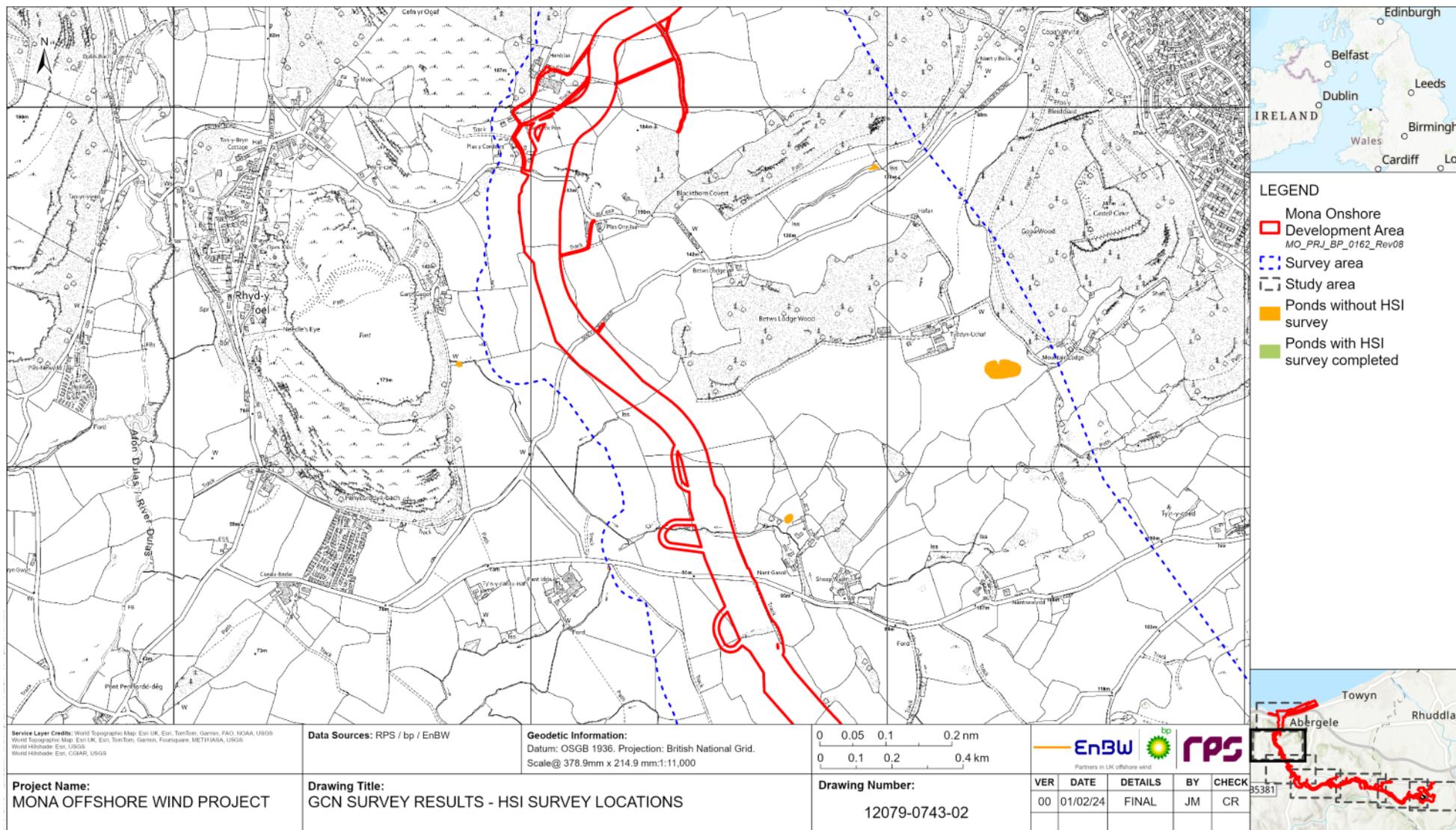


Figure 1.4: GCN survey results - HSI survey locations.

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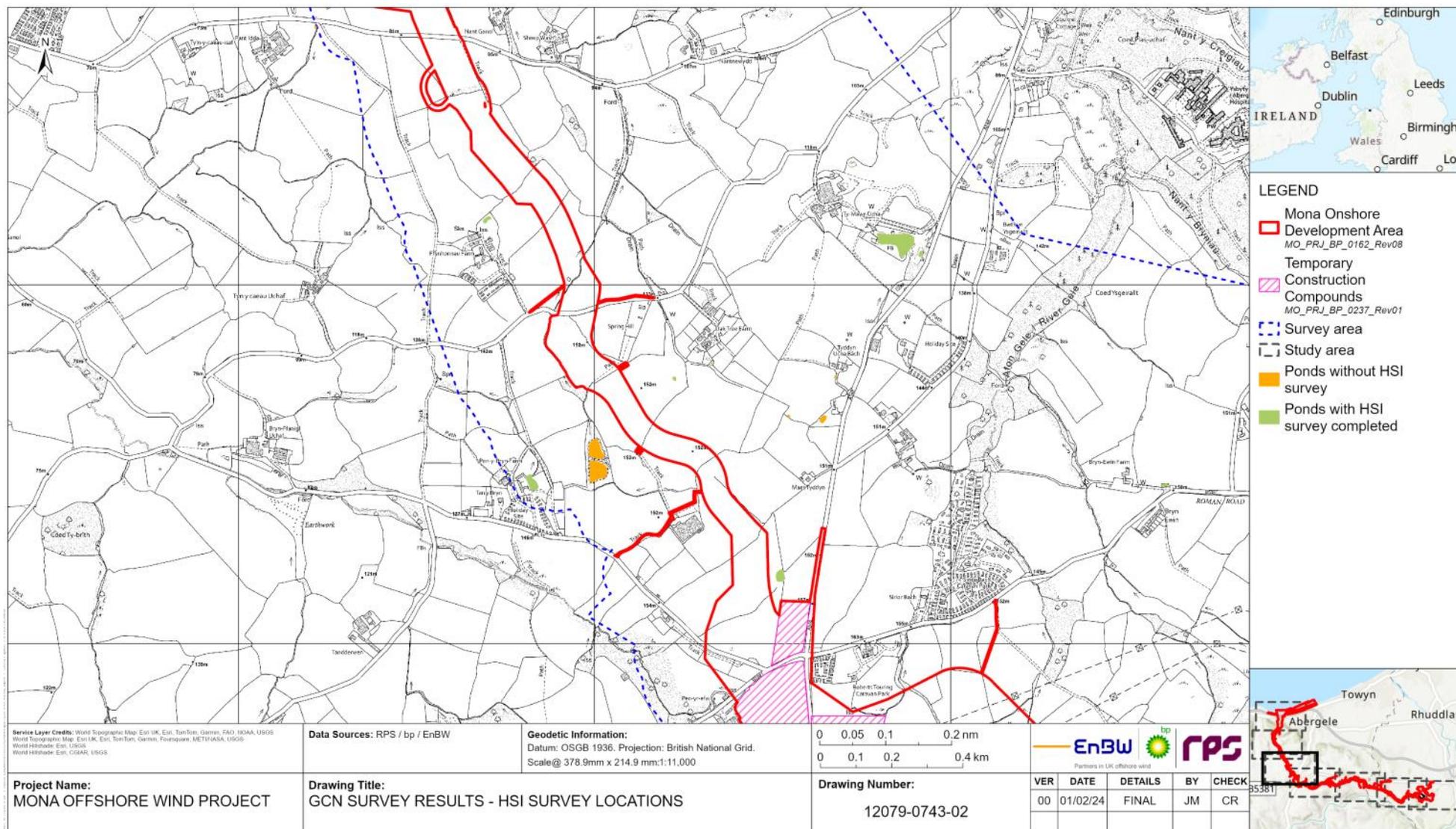


Figure 1.5: GCN survey results - HSI survey locations.

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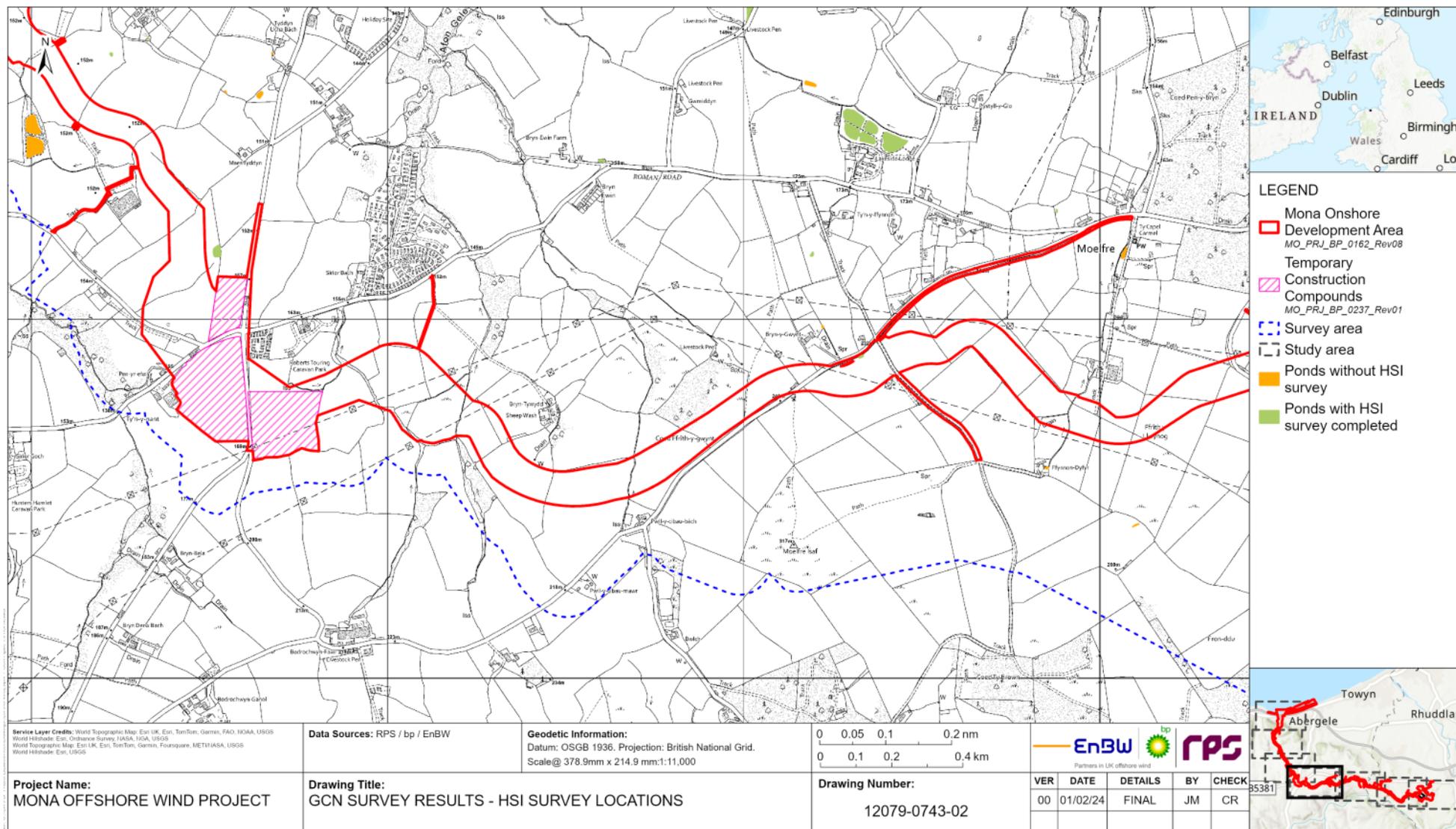


Figure 1.6: GCN survey results - HSI survey locations.

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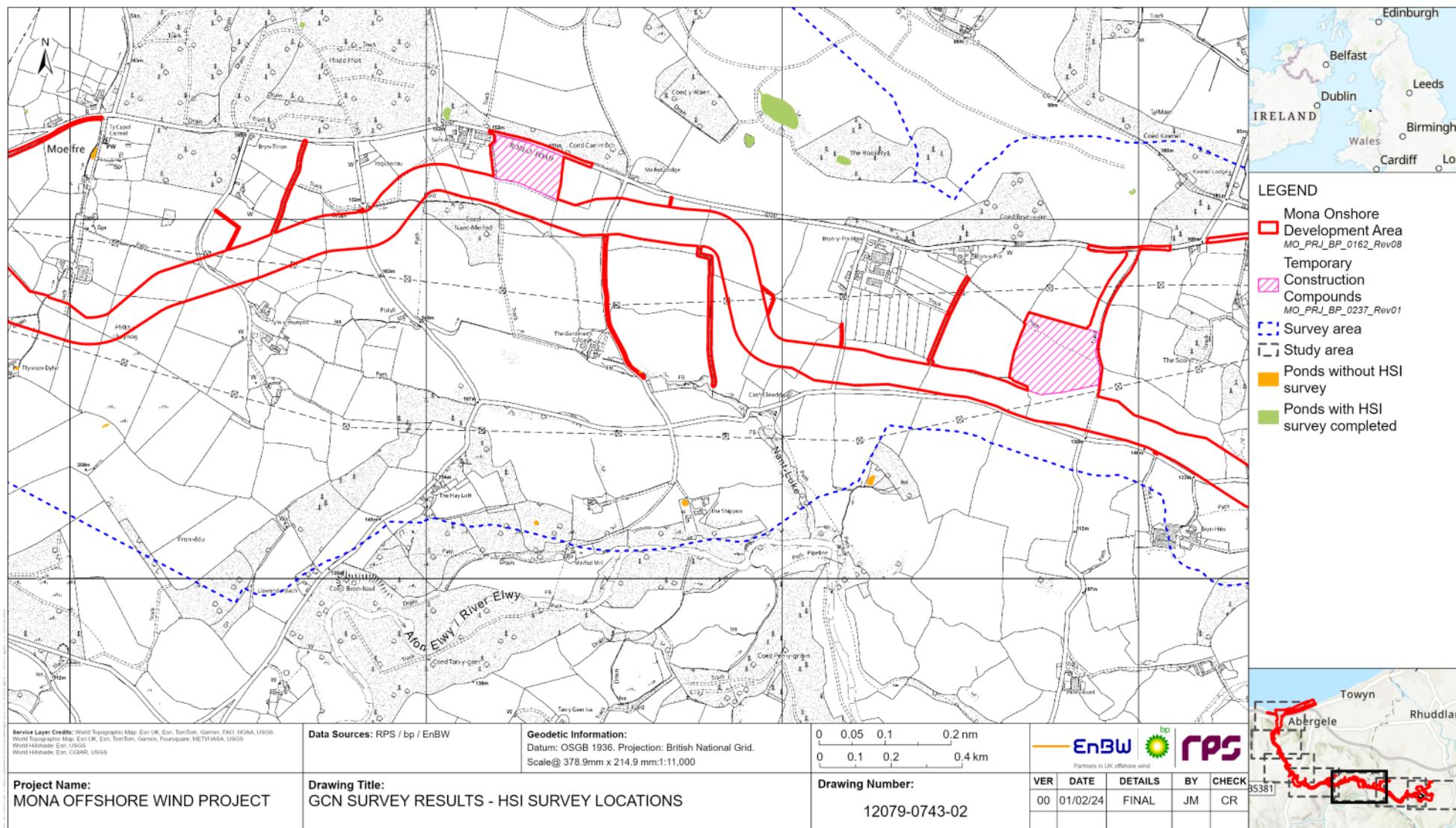


Figure 1.7: GCN survey results - HSI survey locations.

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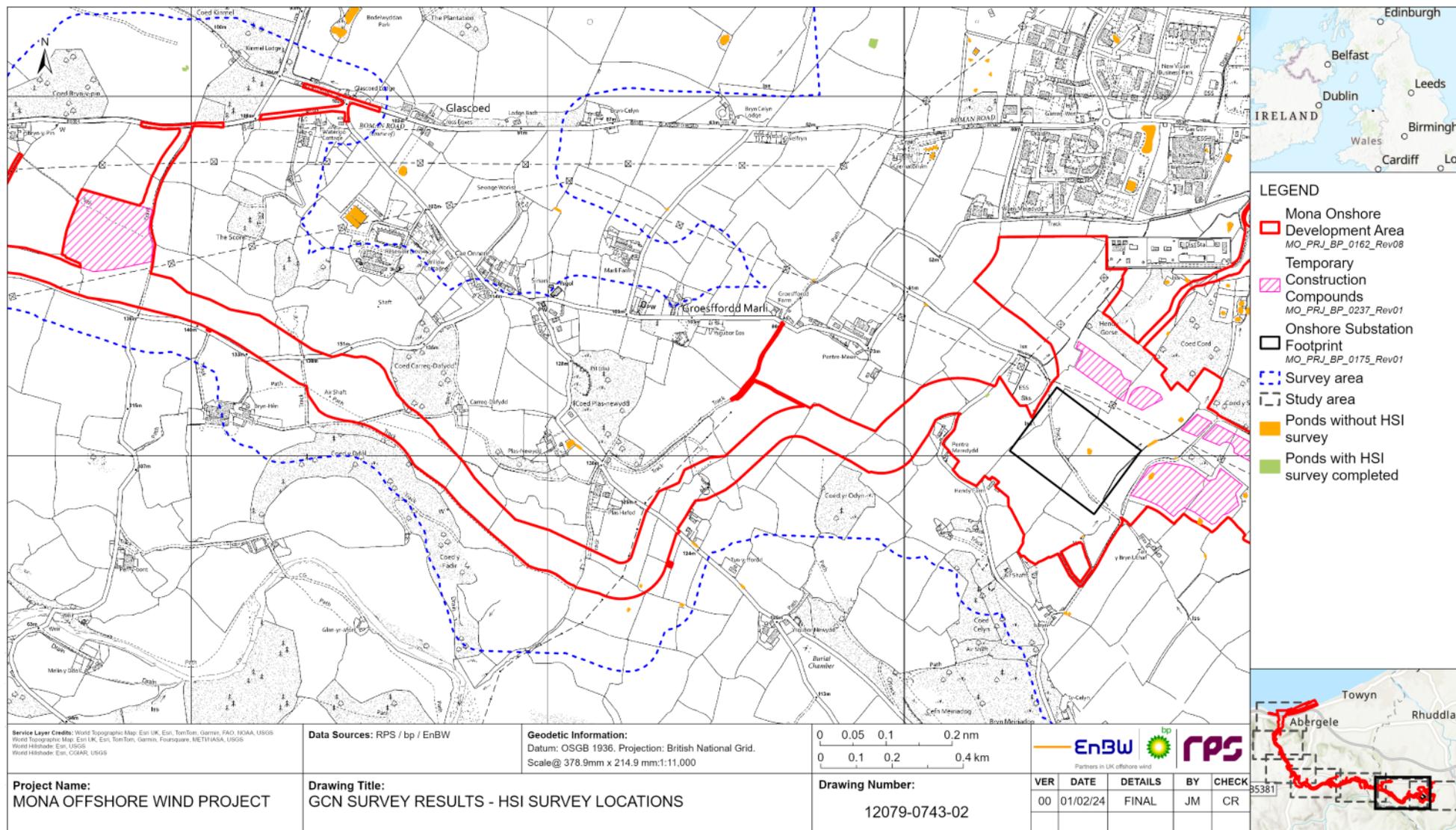


Figure 1.8: GCN survey results - HSI survey locations.

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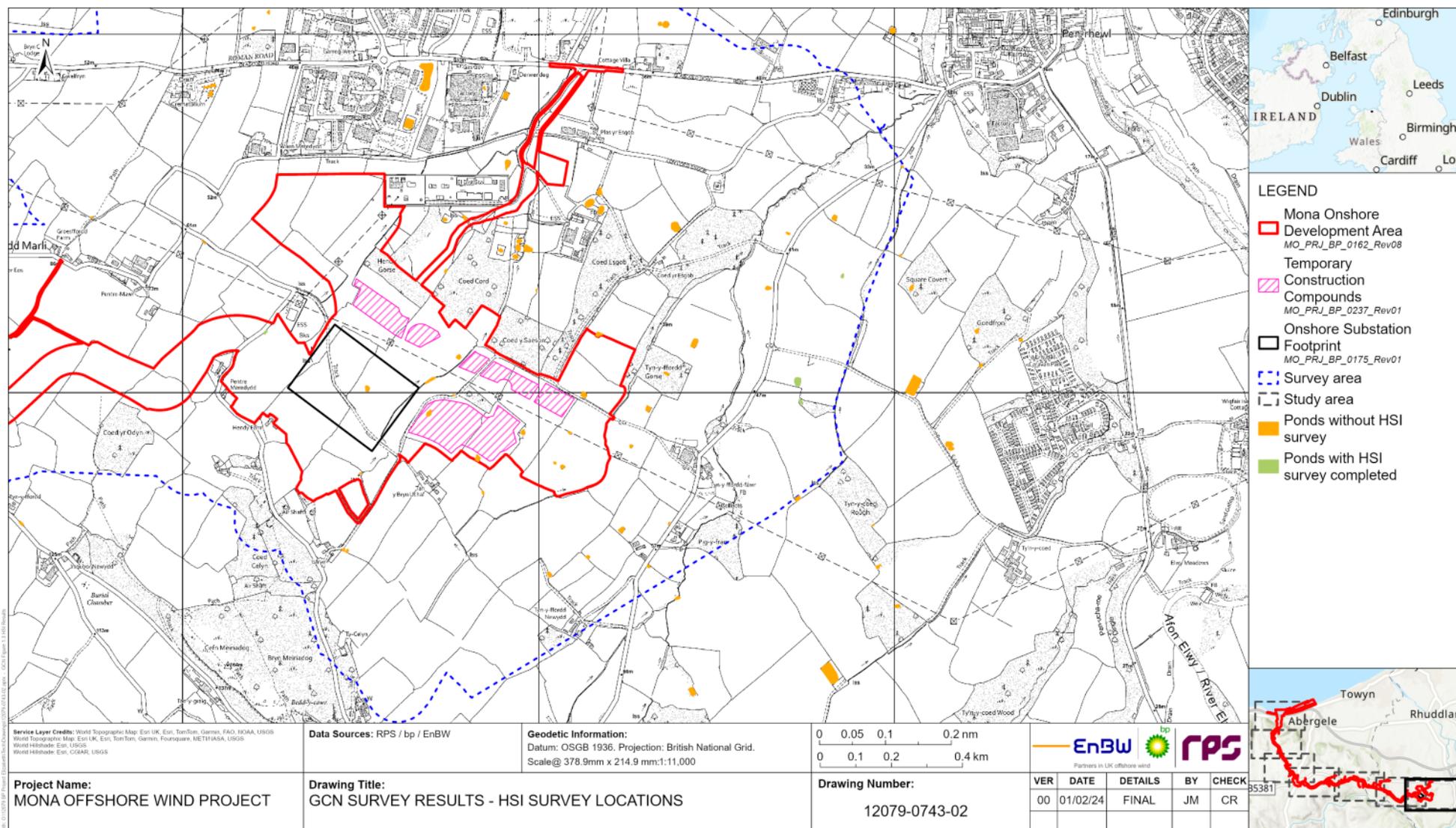


Figure 1.9: GCN survey results - HSI survey locations.

1.8.3 eDNA sampling

1.8.3.1 eDNA sampling was undertaken at 39 waterbodies within the GCN survey area (of which 21 were also subject to HSI surveys). The results of the eDNA analysis confirmed the presence of GCN eDNA in 10 of the surveyed waterbodies. One waterbody, P147, was located within the Mona Onshore Development Area, west of the Permanent Access Route. The locations of all waterbodies subject to eDNA sampling and the results are presented in Figure 1.10 to Figure 1.16. The full list of ponds that were subject to eDNA sampling are presented in Appendix A.

1.8.4 Presence/likely absence surveys

1.8.4.1 Three waterbodies were subject to a single presence or likely absence survey using traditional survey methods in 2023. These were ponds P076, P111, and P121, which were all located outside of the Mona Onshore Development Area and are displayed in Figure 1.10 to Figure 1.16. No signs or evidence of GCN were recorded in any of the three ponds.

1.8.4.2 P111 was subject to bottle trapping, torchlight, netting and egg searching methods. Incidental records of smooth newt *Lissotriton vulgaris* and palmate newt *Lissotriton helveticus* were identified during bottle trapping and netting surveys.

1.8.4.3 P076 and P121 were subject to torchlight, netting and egg search surveys. A single common frog *Rana temporaria* was identified during the torchlight survey at P076.

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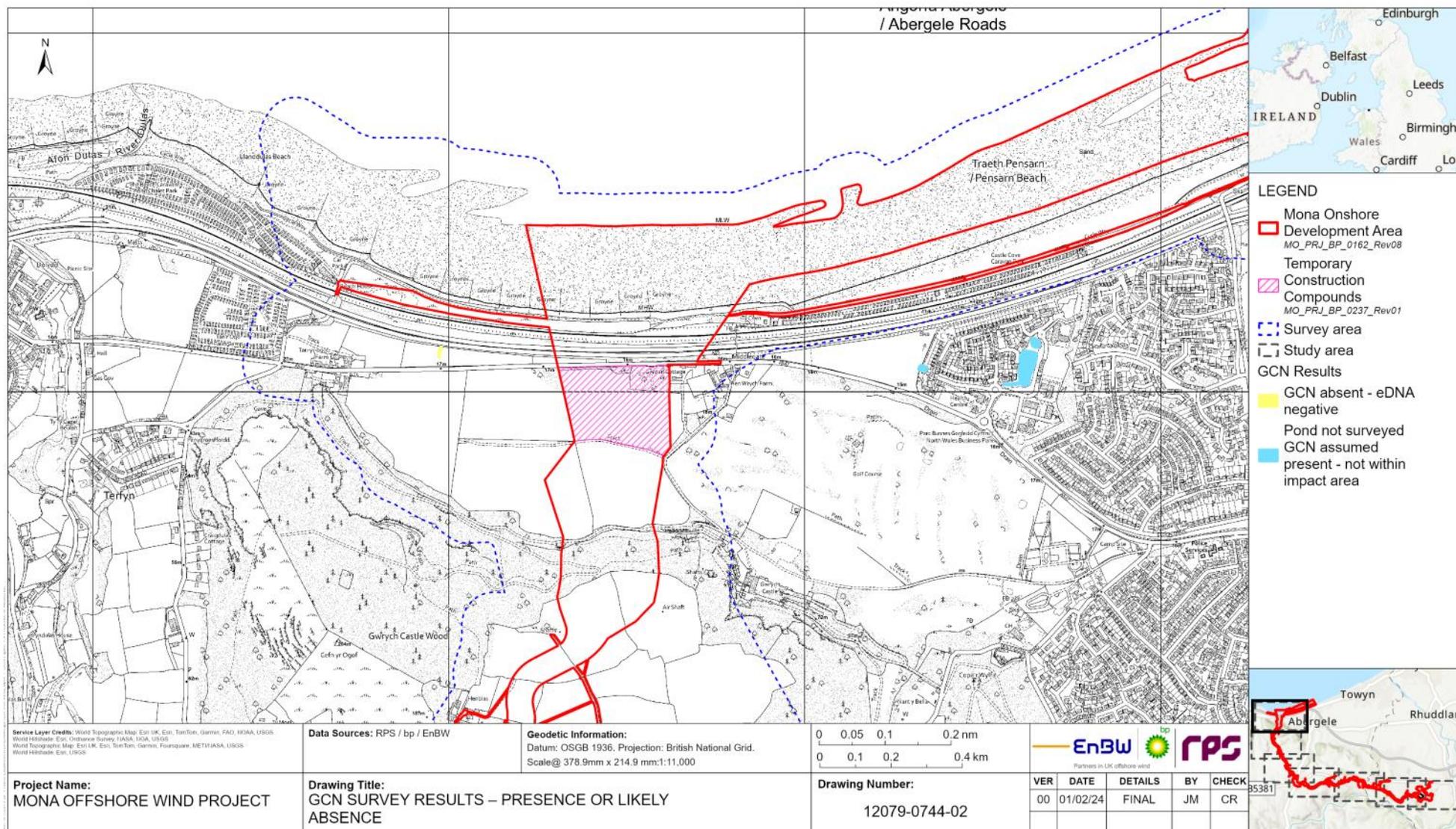


Figure 1.10: GCN survey results – presence or likely absence

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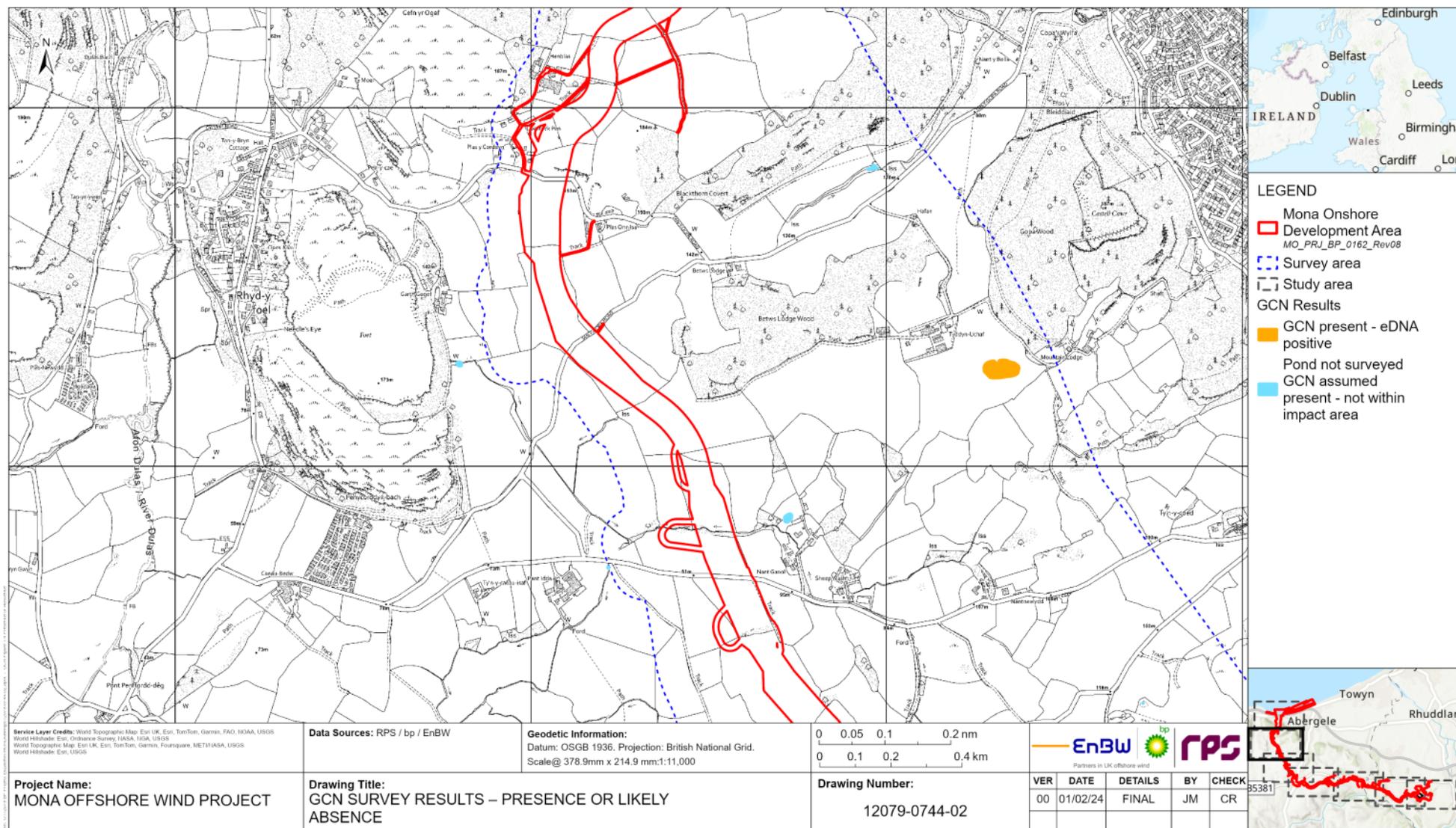


Figure 1.11: GCN survey results – presence or likely absence

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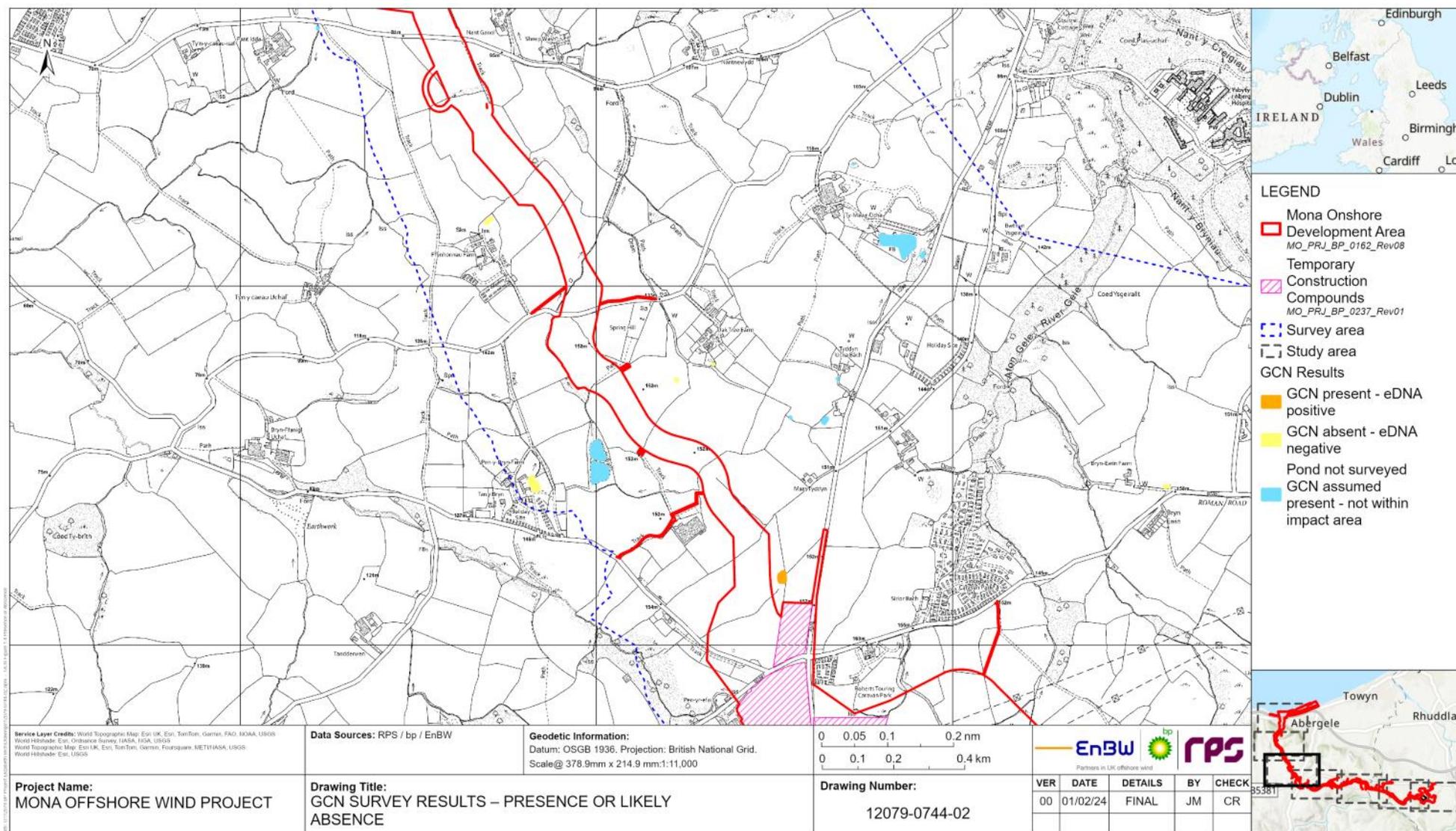


Figure 1.12: GCN survey results – presence or likely absence

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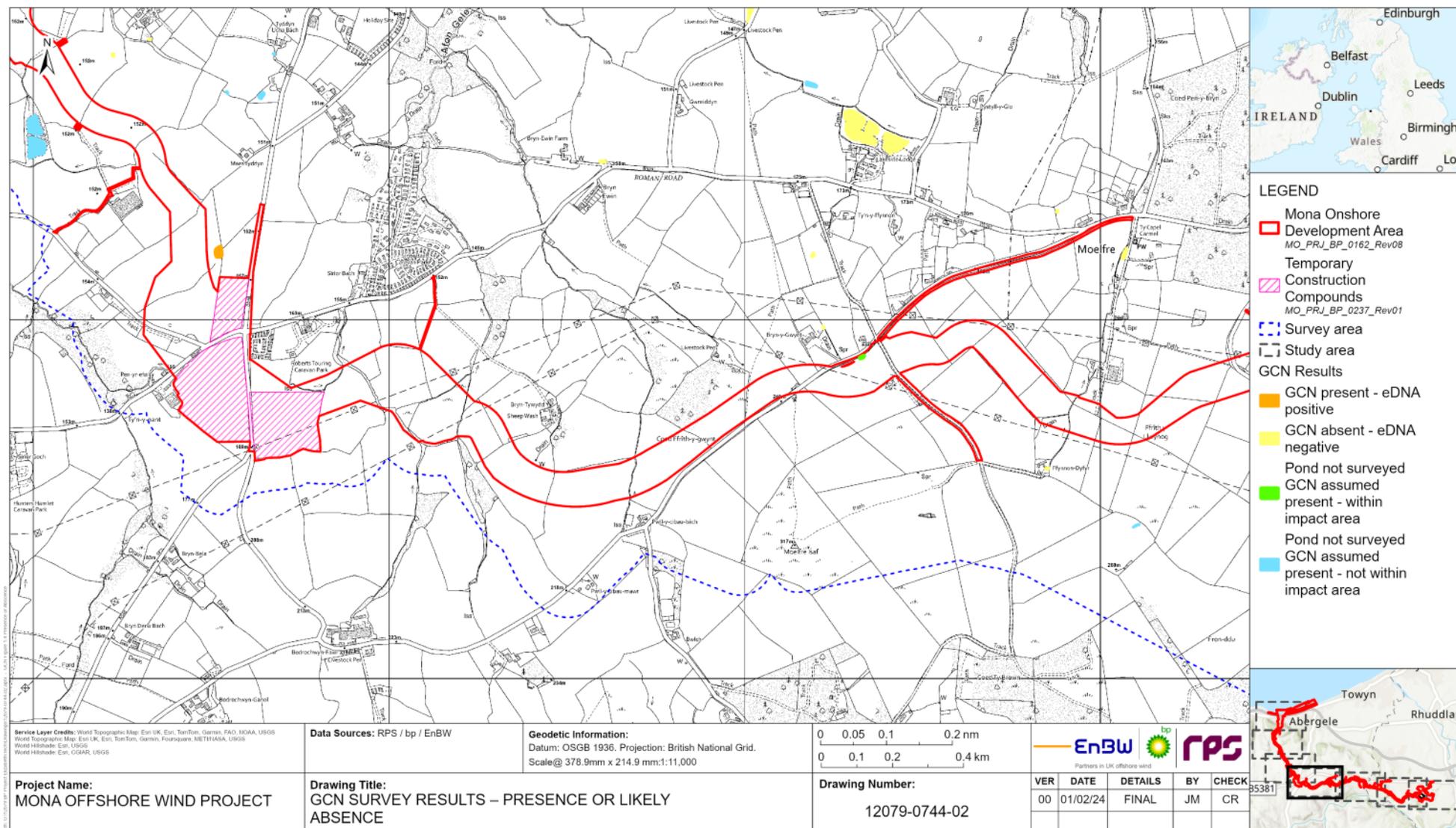


Figure 1.13: GCN survey results – presence or likely absence

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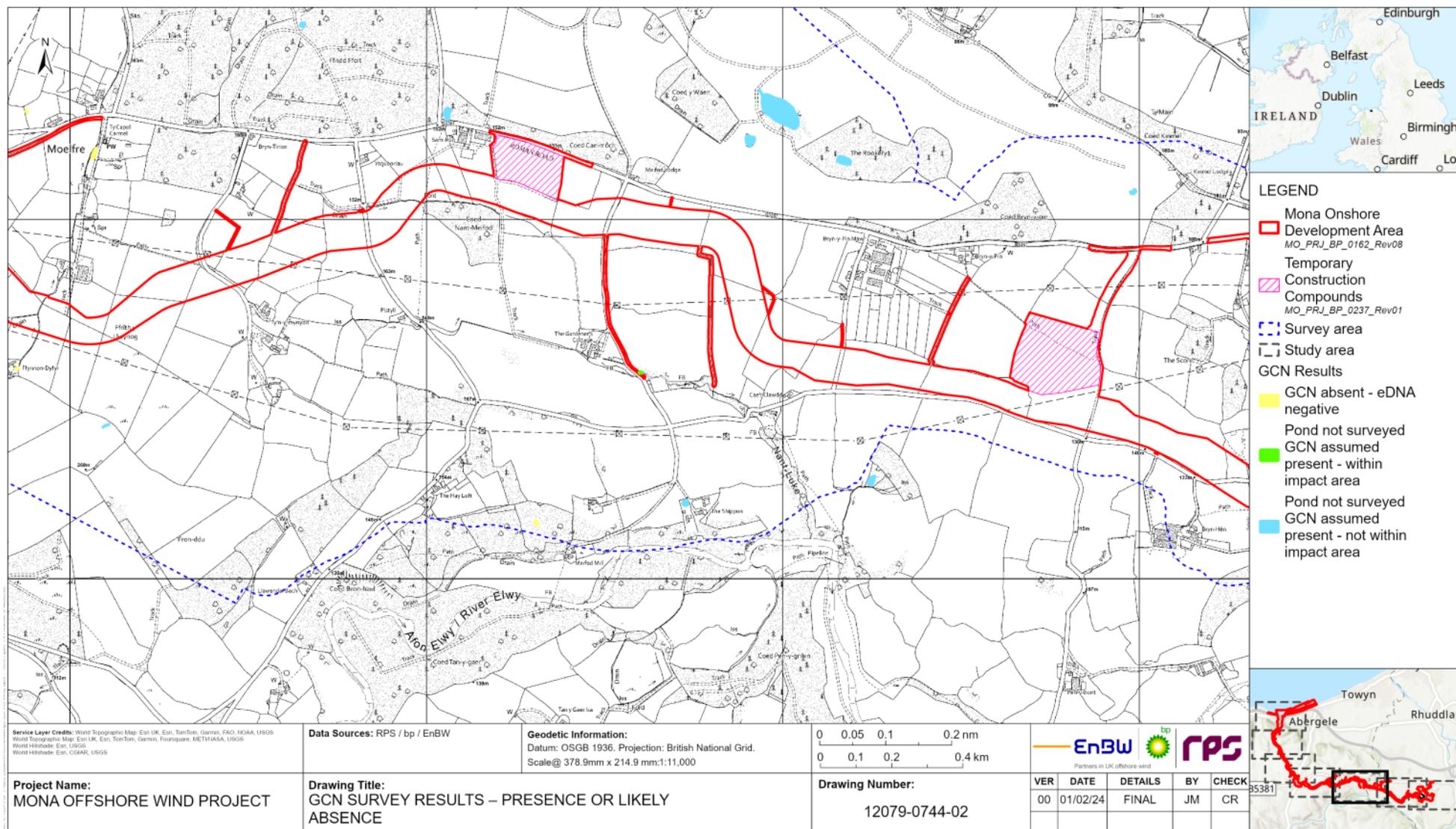


Figure 1.14: GCN survey results – presence or likely absence.

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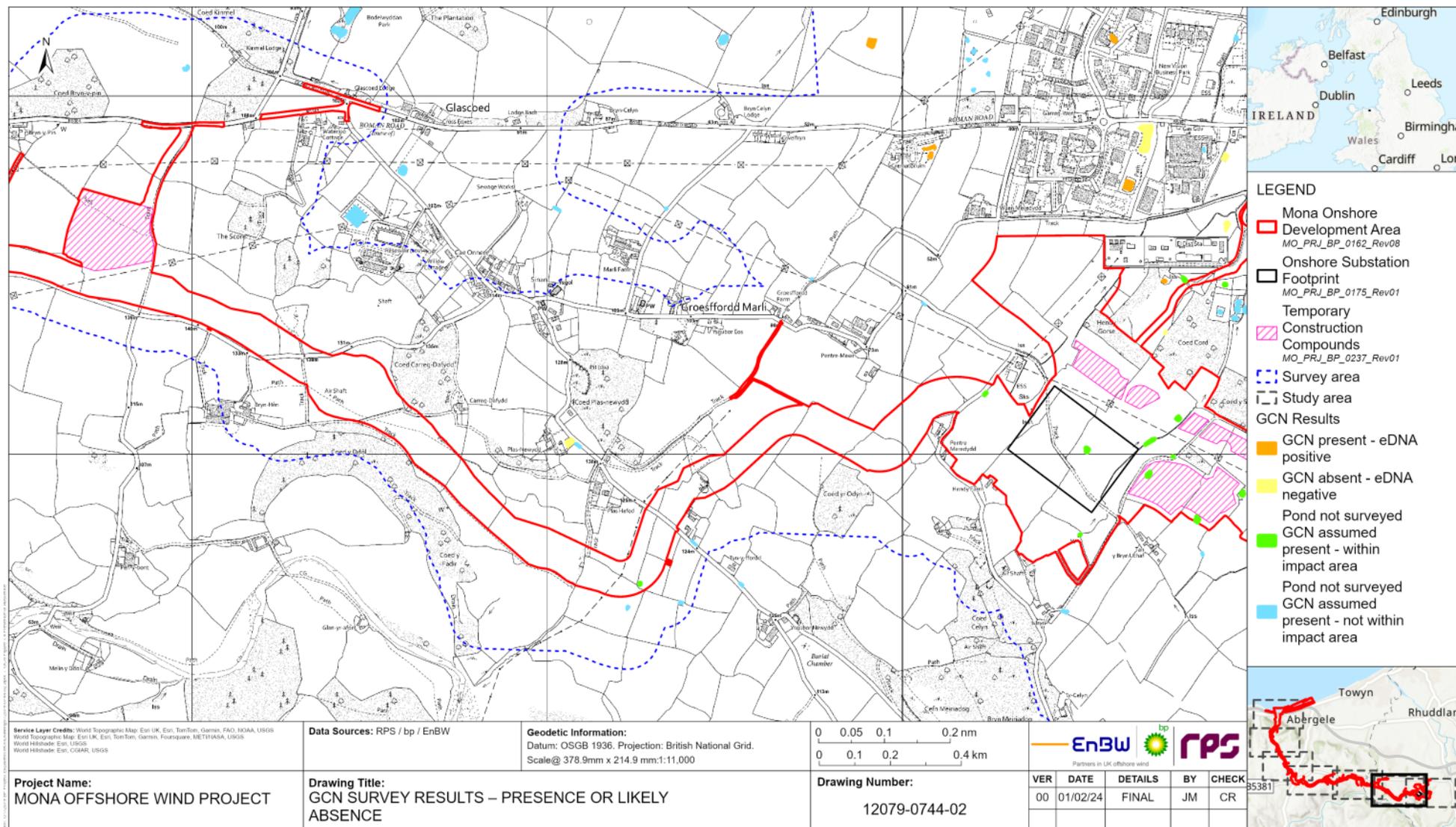


Figure 1.15: GCN survey results – presence or likely absence.

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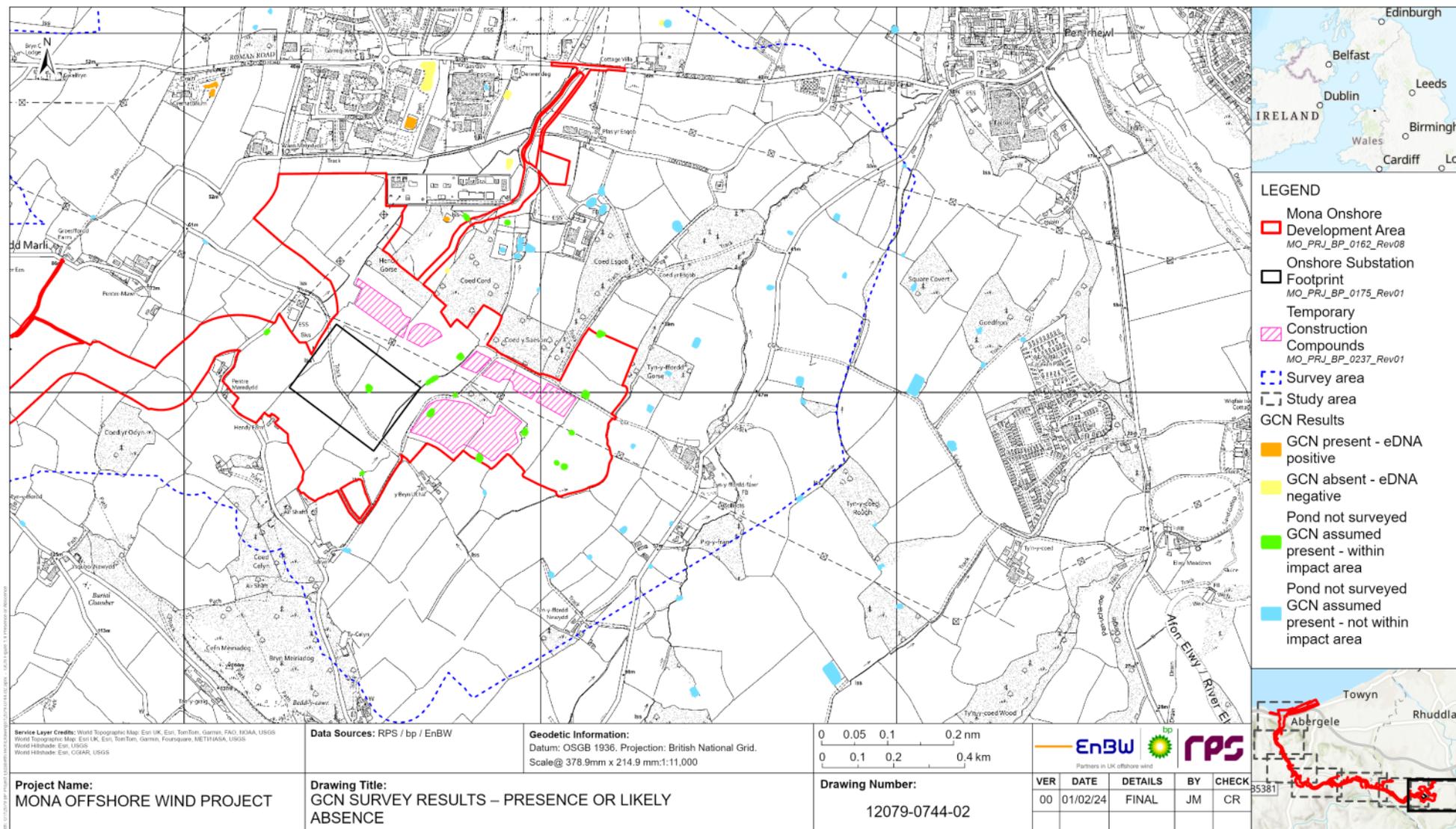


Figure 1.16: GCN survey results – presence or likely absence

1.9 Summary

- 1.9.1.1 This technical report presents the results of the GCN surveys undertaken between April 2022 and June 2023 to inform Volume 3: Chapter 3: Onshore ecology of the Environmental Statement.
- 1.9.1.2 The desk study confirmed that GCN have been recorded throughout eastern Wales but very infrequently in central or western Wales. North-east Wales is recognised as being particularly rich in the species, with the metapopulation in the St. Asaph area considered to be of national importance (Haysom *et al.* 2018). A total of 31 records of GCN were identified from historical biological records obtained from Cofnod within the GCN study area. The most recent record was from 2023, within St. Asaph Business Park, less than 500 m to the north of the Mona Onshore Development Area.
- 1.9.1.3 Many GCN records associated with other infrastructure projects and monitoring surveys are located within the GCN survey area, particularly in proximity to the location of the Onshore Substation. The waterbodies P084, P100, P102, P103, P111, P118, P121, P133, P137, P147, have historically been confirmed as supporting GCN. Using the precautionary approach, the population status of GCN within the Onshore Substation and surrounding habitat has been assessed to be a 'large' population (Langton *et al.* 2001). Maximum and peak numbers of GCN recorded within waterbodies at St. Asaph Business Park during recent (and historic) monitoring surveys, including the survey results from the Bodelwyddan Pond Group indicate that a 'large' population can be assigned to the GCN population within the Onshore Substation.
- 1.9.1.4 Of the 127 identified waterbodies within the GCN survey area, 35 waterbodies were subject to HSI assessments, and 39 waterbodies were sampled for GCN eDNA. GCN presence was confirmed in 10 waterbodies using eDNA surveys. One waterbody with confirmed GCN presence, P147, was located within the Mona Onshore Development Area. The remaining nine waterbodies were located outside of the Mona Onshore Development Area.
- 1.9.1.5 Three waterbodies were subject to presence or likely absence surveys using traditional survey methods, P076, P111 and P121, though no signs or evidence of GCN were recorded within these waterbodies.
- 1.9.1.6 Recent GCN studies within the adjacent St. Asaph area assessed the GCN metapopulation as being of national importance (Haysom *et al.* 2018). GCN were subsequently confirmed to be present in the Mona Onshore Development Area. Given this historic data and that field surveys for the Mona Onshore Development Area were not fully completed, the precautionary approach has been adopted. It is therefore assumed that the area supports a 'large' population, with presence particularly within the Onshore Substation and in proximity to the Permanent Access Route.

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1.10 References

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Appendix A: GCN survey results

Table A. 1: GCN survey results.

Pond reference	HSI score	eDNA Results	Waterbody description	Within Mona Onshore Development Area
P001	N/A	Negative	Small waterbody within grassland south of the A55	No
P009	N/A	N/A	Dry waterbody	No
P021	Good	Positive	Large kidney bean shaped pond with small, vegetated island on one lobe, marginal macrophyte cover including flag iris, duckweed, and broad leaved pondweed.	No
P039	N/A	N/A	Poor and dried out	No
P042	Average	Inconclusive	Medium sized pond, based at the bottom of a sharp incline. Pond margins are heavily vegetated; however, no obvious floating, submerged or emergent vegetation recorded.	No
P045	N/A	N/A	Area of old earth that could very well have been a pond and may fill in adverse weather, but dry and devoid of water species flora.	No
P050	Excellent	Negative	Medium sized pond surrounded by steep earth banks, with a small island present on which a single willow tree was in its centre.	No
P051	Poor	N/A	Large pond located at the edge of small woodland. Waterfowl and fish present.	No
P052	Poor	N/A	Large pond located in a small area of deciduous woodland, waterfowl and fish present.	No
P053	Poor	N/A	Small ponds situated on the margin of a field, low levels of water at the time of the survey.	No
P054	Poor	N/A	Large pond located in small area of woodland, waterfowl, and fish present.	No
P058	Excellent	Negative	Waterbody with inflows within a treeline	No
P062	Poor	Negative	N/A	No
P063	Below Average	N/A	Temporary attenuation pond, to ease flooding from run-off during high rainfall. Slow-flowing input from ditch and output into ditch. Holding very little water at base during time of survey.	No
P064	Average	N/A	Medium sized pond located in pasture field. Evidence of poaching from livestock.	No
P065	Poor	Negative	N/A	No

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Pond reference	HSI score	eDNA Results	Waterbody description	Within Mona Onshore Development Area
P068	Poor	N/A	Very small defunct well, along field boundary hedgerow. Stagnant with near 100% macrophyte cover.	No
P072	Poor	Negative	N/A	No
P073	Poor	N/A	Dried out pond, still damp but thick, muddy base, lots of shading from bankside vegetation. Good surrounding terrestrial habitat.	No
P075	Poor	Negative	N/A	No
P076	Poor	N/A	Standing water in woodland, no aquatic vegetation.	No
P077	Poor	Negative	N/A	No
P078	Poor	Negative	N/A	No
P082	Good	Negative	N/A	No
P083	Good	Negative	N/A	No
P084	Below average	Positive	Medium sized apparently man-made pond in sheep grazed field. Contained internal ledge. Water-level very low at the time of the survey, so that only the deep central area was holding water.	No
P096	Poor	N/A	Small reservoir previously provided water to the main estate's house. Fish and waterfowl present.	No
P097	Poor	N/A	Dried out pond in logging area. Overgrown with regen and grasses. No signs that the area has held standing water for a considerable time.	No
P098	N/A	Negative	N/A	No
P100	N/A	Positive	N/A	No
P102	N/A	Positive	N/A	No
P103	N/A	Positive	N/A	No
P106	Poor	N/A	N/A	No
P111	Good	Positive	Medium, shallow sided pond, with a marshy area surrounding and some scrub/mature willow trees in the immediate area. Short cut grass in the adjacent fields with 4 hedge lines creating some habitat connectivity.	No

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Pond reference	HSI score	eDNA Results	Waterbody description	Within Mona Onshore Development Area
P113	Good	Negative	Long oval pond with an area of approximately 6m x 25m.	No
P114	Average	Negative	Pond on hillside, very little aquatic vegetation. Fitted with an overflow pipe. Very little standing water during the survey visit.	No
P116	N/A	N/A	Dry ground in area of felled woodland. Overgrown with scrub and grasses.	No
P118	N/A	Positive	N/A	No
P121	Poor	Positive	Shallow farm pond in centre of large field, surrounded by trees. Very little aquatic vegetation. Potentially impacted by farm pollutants.	No
P125	N/A	N/A	Pond no longer present, areas of slightly damper ground only.	No
P127	Below Average	Negative	Two ponds on map merged into one large pond. Large hawthorn trees surrounding.	No
P131	N/A	N/A	Dry sandy area of field with no pond present.	No
P132	N/A	Negative	N/A	No
P133	N/A	Positive	N/A	No
P134	N/A	Positive	N/A	No
P135	N/A	Negative	N/A	No
P137	N/A	Positive	N/A	No
P142	N/A	Negative	N/A	No
P147	N/A	Positive	N/A	Yes
P156	N/A	Negative	N/A	No
P157	Poor	N/A	N/A	No
P165	N/A	Negative	N/A	No
P171	N/A	Negative	N/A	No
P172	Average	N/A	N/A	No
P177	N/A	N/A	Dry at the time of survey	No

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Pond reference	HSI score	eDNA Results	Waterbody description	Within Mona Onshore Development Area
P210	Poor	Negative	Small deep pond at edge of field. Water surface covered in duckweed. Bankside willow and bramble overgrowth.	No
P211	Average	Negative	Small rectangular water body just off field margin. Pond is tightly fenced to pond edge with minor pond edge fauna (mostly dogwood, and bramble). Pond fauna is dominated by Typha, which is dominating the water surface area.	No
P213	Average	Negative	N/A	No
P229	Below average	N/A	N/A	No